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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,436	08/01/2003	Michael F. Thomashow	21835-00004	3828

27144 7590 03/21/2006

FOSTER, SWIFT, COLLINS & SMITH, P.C.  
313 SOUTH WASHINGTON SQUARE  
LANSING, MI 48933

EXAMINER
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KUMAR, VINOD

ART UNIT	PAPER NUMBER
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1638

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/632,436

Applicant(s)

THOMASHOW ET AL.

Examiner

Vinod Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12 and 21-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. The objections to claims 8 and 19 are withdrawn in light of claim amendments.
3. The rejection of claims 3, 5, 8, 14, 15 and 16 under 112, second paragraph is withdrawn in light of claim amendments.
4. The rejection of claims 1-3, 5, 7, 8, 14-16 and 19 under 102(e) is withdrawn in light of claim amendments.
5. The disclosure is objected to because this application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825. For example, sequence identifiers are missing from page 101, lines 2-7.

The objection to brief description to figures 6 and 9 are withdrawn in light of amendments to the specification. Drawings were erroneously objected in the cover sheet of Office action mailed on November 4, 2005.

6. Claim 12 remain and new claims 20-25 are rejected under 112, second paragraph as being indefinite in its recitation "comprising an amino acid sequence that is at least 85% homologous to SEQ ID NO: 1", which is confusing, since it is unclear

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how a DNA sequence defined in SEQ ID NO: 1 can be homologous to an amino acid sequence.

7. Claim 12 remain and new claims 20-24 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method for regulating cold and dehydration regulatory genes in a plant comprising transforming a plant with SEQ ID NO: 1, does not reasonably provide enablement for said method comprising transforming said plant with a sequence that is not identical to SEQ ID NO: 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims for the reasons of record stated in Office action mailed on November 4, 2005. Applicants traverse the rejection in the paper filed January 31, 2006. Applicant's arguments were fully considered but were not fully persuasive.

In the paper filed February 3, 2006, Applicants indicate that Examiner has not taken into consideration the limitation that a protein 85% homologous to SEQ ID NO: 1 is capable of binding a DNA regulatory sequence CAACA in the plant that regulates expression of one or more environmental stress genes in a plant (response, page 8, first paragraph). In the instant case Applicants are limiting their claim 12 to at least 85% identity to instant SEQ ID NO: 1. Furthermore, Applicants do not have support in the specification for a protein having at least 95% sequence identity with a protein encoded by SEQ ID NO: 1. Applicants are reminded that SEQ ID NO: 1 is a cDNA sequence encoding the protein of claimed invention. Binding of a transcription factor to CAACA binding site alone does not determine whether said transcription factor will participate in regulating the expression of cold and dehydration genes. By using a protein encoded

by a DNA sequence that is not 100% identical to SEQ ID NO: 1, the over structural characteristic of the modified encoded protein may not be stable enough to participate in regulating cold and dehydration genes, even though it binds at CAACA regulatory DNA sequence. (Office action, 11/4/05; Page 5, paragraph 3). Accordingly, rejection is maintained.

8. Claims 12 remain and new claims 20-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention for the reasons of record stated in Office action mailed on November 4, 2005. Applicants traverse the rejection in the paper filed February 9, 2006. Applicants arguments were fully considered but were not fully persuasive.

Applicants argue that examiner has not followed "Synopsis of Application of Written Description Guidelines", Example 14, pages 53-55 for evaluating written description requirements for the claimed invention (response, page 8, paragraph 4). However, it is noted that the claims recite "85%", which encompasses a much larger genus than 95%. The specification does not teach the structures within SEQ ID NO: 1 or 2 that are required for functionality and which must be shared by all species of the claimed genus.

Applicants urge that by describing the structures of SEQ ID NO: 1 and its encoded protein or a protein that is at least 85% identical to SEQ ID NO: 1 and is capable of binding to CAACA regulatory region would satisfy written description

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requirements for the claimed invention (response, page 9, paragraphs 3 and 4).

Examiner maintains that proteins that are less than 100% identical to a protein encoded by SEQ ID NO: 1 may bind to CAACA but still unable to regulate the expression of cold and dehydration genes, because binding to said regulatory sequence alone will not determine its effective regulatory response. A protein encoded by SEQ ID NO: 1 that has been altered may not be in a position to interact with other regulatory proteins that are equally important to modulate the functional activity of said protein upon its binding to CAACA regulatory region (see Siberill et al., and Luscombe et al. references mailed in Office action of November 4, 2005). Claim 12 encompasses a large number structures whose function has not been predictably determined or established .

Examiner maintains that Applicants have failed to correlate such undescribed structures to the function of regulatory cold and dehydration regulatory genes. Accordingly, the rejection is maintained.

9. Claim 12 remain and new claims 20-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Harper et al. (US Patent Publication No. 2002/0160378; filed August 24, 2001) for the reasons of record stated in Office action mailed on November 4, 2005. Applicants traverse the rejection in the paper filed February 9, 2006.

Applicants arguments were fully considered but were not fully persuasive.

Applicants argue that SEQ ID NO: 2316 of Harper et al. does not teach the property of regulating cold and dehydration genes, and the instant invention describes new use of SEQ ID NO: 1 (response, page 10, lines 11-12). Examiner maintains that Harper et al. specifically teach that the polynucleotides taught in the reference would confer any type of stress tolerance that includes cold and dehydration related stresses

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(Paragraph 0031). Additionally, the property of regulating cold and dehydration genes is inherent to the method used by Harper et al. as SEQ ID NO: 2316 (100% identical to instant SEQ ID NO: 1) encodes a protein that has the inherent property of binding to CAACA regulatory sequence of cold and dehydration genes.

Applicant argues that Harper et al. data is incorrect because it does not teach freezing and drought tolerance property of SEQ ID NO: 2316. However, Applicants do not provide any data showing SEQ ID NO: 1 does not confer salt stress tolerance.

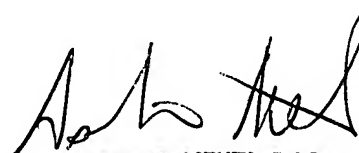
### ***Summary***

10. Claims 12, 20-25 are rejected.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinod Kumar whose telephone number is (571) 272-4445. The examiner can normally be reached on 8.30 a.m. to 5.00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



ASHWIN D. MENTA, PH.D.  
PRIMARY EXAMINER